



Soya and Health



The soya bean, (a member of the pea family) provides a source of good fats - the polyunsaturated fats, especially linoleic (omega-6) and alpha-linolenic acid (omega-3). It is low in saturated fat, the type that we all need to reduce. In the UK, one portion of soya beans can count towards the recommended five portions of fruits and vegetables a day. Soya is the only plant food considered to be a complete protein (containing all essential amino acids to meet the human body's requirements) and it also contains fibre, mainly of the soluble type and a number of vitamins and minerals.

The soya bean, like many plant foods, contains compounds such as oxalate and phytate that can inhibit mineral absorption. However, despite this, calcium absorption from the soya bean is relatively good (1).

The majority of potential health benefits attributed to soya are related to other bio-active substances- isoflavones. Isoflavones are a type of phytoestrogen (plant oestrogens) that are similar in structure to the human oestrogen hormone, 17 β -oestradiol. Although much less potent (1/10,000) than human oestrogens, phytoestrogens are thought to be able to either mimic or block the normal actions of human oestrogens. Furthermore, phytoestrogens have been shown to have antioxidant effects and they may have other potential benefits such as effects on cell health.

Soya in the diet

Although claims in the popular press suggest we are consuming huge amounts of soya, studies suggest that intake of soya in the UK is modest- estimated between less than 1g-3.5g per day. New soya food products are entering the market all the time and include milks, yoghurts, frozen soya beans (edamame), cream, bread, desserts and meat alternatives such as TVP and tofu (2,3). In other parts of the world, especially Asia, soya has been a staple part of the diet for over 5000 years(4).

What we know about soya and health

Research has indicated a strong link between serum cholesterol levels and the prevalence of Coronary Heart Disease (CHD) (5). A 1% reduction in cholesterol levels is thought to result in a 2% reduction in CHD risk. Studies have demonstrated that consuming 25g of soya protein a day leads to a 0.23mmol/l reduction in total cholesterol, which could equate to a 10% reduction in CHD risk. If your initial

cholesterol level was 4.6mmol/l. Soya has a greater cholesterol lowering effect when the initial cholesterol levels are higher (6).

The following health claim for soya containing foods has been approved by the Joint Health Claims Committee: "The inclusion of at least 25g of soya protein per day, as part of a diet low in saturated fat, can help lower blood cholesterol"(8)

There is further interest in what's known as the Portfolio effect. Recent evidence (7) indicates that the combined use of soya protein, soluble fibre, almonds and plant sterols have the potential to decrease LDL cholesterol by 20% equivalent to a first line statin drug. This approach cannot replace statins but can provide a useful adjunct to statin therapy in motivated patients, as well as an approach for those who cannot or do not wish to take statins.

Other potential benefits of soya

As well as heart health, other potential benefits of soya foods have been suggested

Bone Health :

Populations consuming large amounts of soya appear to have higher bone densities than those with a lower intake of soya (9). Further clinical trials are being conducted in this area to establish whether soya consumption can help reduce the risk of osteoporosis.

Menopausal symptoms :

It is estimated that up to 80% of western women experience hot flushes (vasomotor symptoms) during the menopause. For women in Asian countries the figure is around 18-20%(10). Results from numerous studies in this area have been conflicting, but the trend suggests there may be some vasomotor symptom relief for women experiencing five or more hot flushes a day by including isoflavone rich foods in the diet. Based on the current evidence, the American Menopause Society's position paper suggests that a regular and modest intake of whole foods containing isoflavones has the potential to relieve menopausal symptoms (11). In practical terms this means including two or three of the following foods every day

- ◆ 1 glass of soya milk
- ◆ 2 slices of soya bread
- ◆ 1 small soya yoghurt
- ◆ 100g tofu or TVP



Cancer

Populations in some Asian countries tend to have a lower prevalence of cancers of the breast, uterus, prostate and colon(12). However, some concerns have been raised over a possible detrimental effect of soya in breast cancer patients (13,14).

Several recent papers have reviewed the subject of whether soya increases breast cancer risk and whether breast cancer patients (taking and not taking tamoxifen) should avoid soya. Overall, there is no clear indication that consumption of soya food is not acceptable in those at risk of breast cancer or with breast cancer (15) Should we have any concerns about soya?

Is soya safe?

Soya foods and ingredients are permitted for use in the UK under the provisions of the Food Safety Act 1990.



Questions have been raised regarding their safety in relation to thyroid abnormalities, Alzheimer's disease, hormonal status and mineral availability. However its safety has been extensively reviewed by a number of major Committees including the UK Committee on Toxicity (16) and the US Food and Drug Administration (18).

Is soya based infant formula safe?

The most recent figures published by the Department of Health suggest that between 2-3% of infants in the UK up to the age of 9 months are fed soya infant formulas. There is controversy as to the safety of soya based formula in the early months of life due to both its potential oestrogenic

effect in the developing infant, and its allergenic potential in those infants at high risk of food hypersensitivity. It is not recommended for infants under six months of age.

Breastmilk is the preferred source of nutrition for infants. Mothers who choose not to, or cannot, breastfeed should use cow's milk based formula; infant soya formula may be the alternative choice where the mother is vegan and has chosen not to breast feed.

Extensively hydrolysed formula is recommended for cow's milk protein allergy or intolerance in babies under 6 months of age. Anyone considering using soya based formula should consult a health care professional first (19). More research is needed to determine the benefits or otherwise of soya infant formulas in the short and long term.

Is soya allergenic?

As with many food products there are certain people who may be allergic to soya, although allergy to soya is only found in about 0.5% of the general population.

Is soya damaging to the thyroid?

Researchers have recently investigated the effects of soya food or isoflavones on thyroid function. It appears that there is no reason at all for people with hypothyroidism, underactivity of the thyroid gland, to avoid soya. The researchers did however point out that it is important to take enough iodine.(20)

Summary

While the research investigating soya's potential health benefits is still in its infancy, it is fair to say that based on its nutritional profile alone it fits in well with current healthy eating guidelines. As such, for the majority of people soya can be enjoyed as part of a healthy, balanced diet.

